CLAIMS

What is claimed is:

1. A cable modem having a programmable media access controller, comprising:

a system bus;

a plurality of processors, each of the plurality of processors is communicatively coupled to the system bus, that perform a plurality of processing functions, the plurality of processing functions are partitioned, at least in part, between at least two of the plurality of processors;

a peripheral bus that is operable to perform transfer of cable media;

a bridge that communicatively couples the system bus and the peripheral bus; and

a peripheral processing device, communicatively coupled to the peripheral bus, that is operable to perform processing of a selectively off-loaded portion of the cable media.

2. The cable modem of claim 1, wherein one of the plurality of processors supports upstream data transfer of cable media received by the cable modem; and

at least one other of the plurality of processors supports downstream data transfer of the cable media transmitted by the cable modem.

3. The cable modem of claim 1, wherein one of the plurality of processors is operable to perform at least one of message processing and scheduling.

4. The cable modem of claim 1, wherein the bridge comprises a direct memory access controller that is operable selectively to provide a portion of the cable media to one of the

plurality of processors and to provide the off-loaded portion of the cable media to the peripheral processing device.

5. The cable modem of claim 1, further comprising at least one additional peripheral processing device, communicatively coupled to the peripheral bus, that is operable to perform processing of at least one additional selectively off-loaded portion of the cable media.

6. The cable modem of claim 1, wherein the plurality of processing functions comprises operating system functionality.

7. The cable modem of claim 1, wherein the plurality of processing functions comprises media access control functionality.

8. The cable modem of claim 1, wherein one of the plurality of processors employs embedded code to support media access control functionality.

9. A cable modem device, comprising:

a bifurcated bus structure comprising a first bus and a second bus;

a partitioned processor structure, communicatively coupled to the first bus, comprising a plurality of processors, that is operable to perform a plurality of processing functions;

a co-processor, communicatively coupled to the second bus, that is operable to support processing of cable media that is selectively off-loaded from at least one of the plurality of processors;

an input/output interface, communicatively coupled to the second bus, that is operable to perform data transfer of a plurality of data to the second bus; and

a direct memory access controller that communicatively couples the first bus and the second bus and that is operable to support off-loading of at least one function of the plurality of functions to the co-processor.

10. The cable modem device of claim 9, further comprising at least one additional co-processor, communicatively coupled to the second bus, that is also operable to support processing of cable media that is selectively off-loaded from at least one of the plurality of processors.

11. The cable modem device of claim 9, wherein the first bus employs an Advanced System Bus protocol; and

the second bus employs an Advanced Peripheral Bus protocol.

12. The cable modem device of claim 9, wherein one of the plurality of processors supports upstream data transfer of cable media received by the cable modem; and

at least one other of the plurality of processors supports downstream data transfer of the cable media transmitted by the cable modem.

13. The cable modem device of claim 9, wherein the co-processor is operable to perform at least one of DES encryption and DES decryption.

14. The cable modem device of claim 9, wherein the plurality of processing functions comprises operating system functionality and media access control functionality.

15. The cable modem device of claim 9, wherein the second bus operates consuming power at a rate lower than a rate at which the first bus consumes power.

16. The cable modem device of claim 9 manufactured as an integrated circuit.

17. A method to perform processing within a cable modem, the method comprising:

performing cable media processing using a plurality of processors, the cable media processing is partitioned, at least in part, between at least two of the plurality of processors;

selectively off-loading a portion of the cable media from at least one of the plurality of processors to a co-processor; and

processing the off-loaded portion of the cable media using the co-processor.

18. The method of claim 17, wherein the method is performed within an integrated circuit.

19. The method of claim 17, wherein at least one of the plurality of processors comprises embedded code that is substantially operable for media access control functionality.

20. The method of claim 17, further comprising directing upstream and downstream communications of cable media using at least two of the plurality of processors.